We claim:

1. A semiconductor wafer processing method comprising affixing a protective tape to the front surface of a semiconductor wafer having a plurality of circuits formed on its front surface, grinding the back surface of the semiconductor wafer and then, subjecting the back surface of the semiconductor wafer to plasma etching, wherein

a tape having an adhesive layer that is hardened by exposure to ultraviolet radiation is used as the protective tape and the protective tape is exposed to ultraviolet radiation to harden the adhesive layer before the back surface of the semiconductor wafer undergoes plasma etching.

2. A semiconductor wafer processing method comprising forming dividing grooves having a predetermined depth along a plurality of streets on the front surface of a semiconductor wafer having a plurality of streets on the front surface in a lattice form and a circuit formed in each of a plurality of areas sectioned by the plurality of streets, affixing a protective tape to the front surface of the semiconductor wafer having the dividing grooves formed thereon, grinding the back surface of the semiconductor wafer until the dividing grooves are exposed to separate into individual circuits and then, executing plasma etching of the back surface of the semiconductor wafer, wherein

a tape having an adhesive layer which is hardened by exposure to ultraviolet radiation is used as the protective tape, and the protective tape is exposed to ultraviolet radiation to harden the adhesive layer before the back surface of the semiconductor wafer undergoes plasma etching.